

CCCGGGCCCCGGCCGCCGCGGGACCCGTGCCCGGCCGTGCCACCGCCGCCCGACCGAG
 GGACCCGCCGCCGCCGGCTGCCGACCTAGAGGATCAAGTCATAATGGGAGCATTAGACAAGCC
 AAAGATGGAGAAGCATAATGCCAGGGCAGGGGAATGGTTACCGATAACGGCCTAACGCAGCATGCAAGGT
 TGGCGAGTTGAAATGGAGGACGACACACGGCTGTATCGGTTGCCAAGTGGACTTGAGACATGGTCAT
 TCTTGCTGTATATGATGGGATGCTGGTTCTCAGGTTGCCAAATACTGCTGTGAGCAGCTGTTAGATCA
 CATCACCAATAACCAGGATTCAGAGGATCTGCAGGAGCACCTCTGTGGAGAACGTAAGAAATGGAATC
 AGAACAGGGTTCTGGAGATTGATGAAACACATGAGAGTTATGTCAGAGAACATGGTCAGATAGAA
 GCGGGTCAACAGCTGTGGCGTCTTAATCTCTCCCCAACATAACTTATTCATTAACGTGGAGACTCGAG
 AGGTTTACTTGTAGGAATAGAAAAGTCACCTCTCACACAAGACCATAAACCAAGTAACCGCTGGAA
 AAAGAACGAATTCAAGATGCAGGGGGCTCGGTGATGATTCAAGCAGCTCTGGCTGTATCGA
 GGGCCCTGGGGATTCGATTACAAATGTGTCATGGAAAAGGTCCCACAGAGCAGCTGTCTCCCCAGA
 GCCCGAAGTCCATGATATTGAAAGGTCTGAAGAACAGTGAACAGTTCATCATCCTGCATGCGATGGCATH
 TGGGACGTATGGGAAACGAAGAGCTCTGTGACTTTGTGAGATCCAGACTTGAAGTCACTGATGACCTTG
 AGAAAAGTTGCAATGAAGTAGTCGACACCTGCTTGTATAAGGGAAAGTCGAGAACACATGAGTGTGATTT
 GATCTGTTCCAAGTCACCCAAAGTCTCGGCAGAGCGGTGAAGAACAGGAGGCGGAGCTGGACAAGTAC
 CTGGAGAGCAGAGTAGAACATCAAAGAACAGGTGGAAAGGCGTCCCTGACTTAGTCCACGTGATGC
 GCACGTTAGCCAGTGAAGAACATCCCCAGCCTCCACCAGGGGTGAATTGGAAGCAAGCGGAATGTAAT
 TGAAGCCGTTACAATAGACTGAACCTTACAAAAATGACGACACTGATTCTGCGTCAACCGATGATATG
 TGGTAAAGCCGCTCACCCAGCCGTGGACTCACCTCGCTGCAAAGGGAAAGCCAGCTCATCCTGCCGA
 GCCTTACCATCCATCACCGACTTCACAGGAGGTCTGACACGGGTGAGGACTGCAG (SEQ NO:1)

MGAFLDKPKMEKHNAQGQGNGLRYGLSSMQGWRVEMEDAHTAVIGLPSGLETW
 SFFAVYDGHAGSQVAKYCEHLLDHITNNQDFRGSAGAPSVENVKNGIRTGFLEID
 EHMRVMSEKKHGADRSGSTAVGVLISPQHTYFINCGDSRGLLCRNRKVHFFTQDH
 KPSNPLEKERIQNAGGSVMIQRVNGLAVSRALGDFDYKCVHGKGPTEQLVSPPE
 VHDIERSEDDQFIILACDGIVDVMGNEELCDFVRSRLEVTDDLEKVCNEVVDTCL
 YKGSRDNMSVILICFPSAPKVAEAVKEAELDKYLESRVEEIKKQVEGPDLVH
 VMRTLASENIPSLLPPGELASKRNVIEAVYNRLNPYKNDDTDSASTDDMW (SEQ
 ID NO:2)

FIGURE 1

underlined = deleted in targeting construct

[] = sequence flanking Neo insert in targeting construct

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CCCCGGGCCCCGGCCGCCGTGCAGGGACCCCGTGCCTGCCGCCGTGCACCACGCCGCCCG
GCCGACCGAGGGACCCGCCGCCGCCGTGCTCCGG [ACCTAGAGGATCAAGTCATAATG
GGAGCATTAGACAAGCAAAGATGGAGAAGCATAATGCC] AGGGCAGGGAAATGGG
TTACGATACAGCCTAACGCAAGGTTGGCGAGTTGAATGGAGGACGCACACAG
GCTGTGATCGGTTGCCAAGTGGACTTGAGACATGGTCATTCTGCTGTATATGATGGG
CATGCTGGTTCTCAGGTTGCCAATA [CTGCTGTGAGCACTTGTAGATCACATCACCACAT
AACCAGGATTTCAGAGGATCTCAGGAGCACCTCTGTGGAGAACGTAAGAACATGGAATC
AGAACAGGGTTCTGGAGATTGATGAACACATGAGAGTTATGTCAGAGAACATGGT
GCAGATAGAAGCGGGTCAACAGCTGTGGCGTCTTAATCTCTCCCCAACATACCTTATTTC
ATTAACGTGGAGACTCGAGAGGTTACTTGTAGGAATAGAAAAGTTCACTCTTCACA
CAAGACCATAAACCAAGTAACCCGCTGGAAAAAGAACGAATTCAAGAACATGCAGGGGCTCG
GTGATGATTCAAGCGTGTCAATGGCTCTCGGCTGTATCGAGGGCCCTGGGATTCGAT
TACAAATGTGTCCATGG] AAAAGGTCCCACAGAGCAGCTGTCTCCCAGAGCCCAGTC
CATGATATTGAAGGTCTGAAGAACGATGACCAGTTCATCATCCTTCATGGCAGTC
TGGGACGTCATGGGAACGAAGAGCTCTGTGACTTGTGAGATCCAGACTGAAAGTC
GATGACCTTGAGAAAGTTCAATGAAGTAGTCGACACCTGCTGTATAAGGGAAAGTCGA
GACAACATGAGTGTGATTTGATCTGTTCAAGTGCACCCAAAGTCTCGGCAGAGCG
GTGAAGAAGGAGGGAGCTGACAAGTACCTGGAGAGCAGAGTAGAACATCAAAG
AAGCAGGTGGAAGGGTCCCTGACTTAGTCACGTGATGCGCACGTTAGCCAGTGAGAAC
ATCCCCAGCCTCCACCAGGGGTGAATTGCAAGCAAGCGGAATGTAATTGAAGCCGT
TACAATAGACTGAACCCCTACAAAATGACGACACTGATTCTGCGTCAACCGATGATATG
TGGTAAAGCCGCTCACCCAGCCGTGGACTCACCTCGCCTGCAAAGGGGAAGCCAGCTCA
TCCTTGCCGAGCCTTACCATCCATACCGACTTCACAGGAGGGTCTGACACGGGTGAGG
ACTGCAG

```

FIGURE 2A

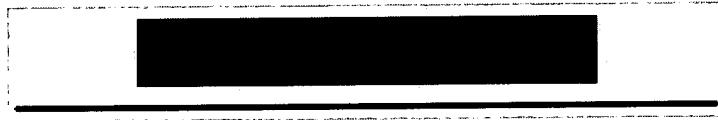
Gene Sequence Structure*****

164 bp

Sequence Deleted

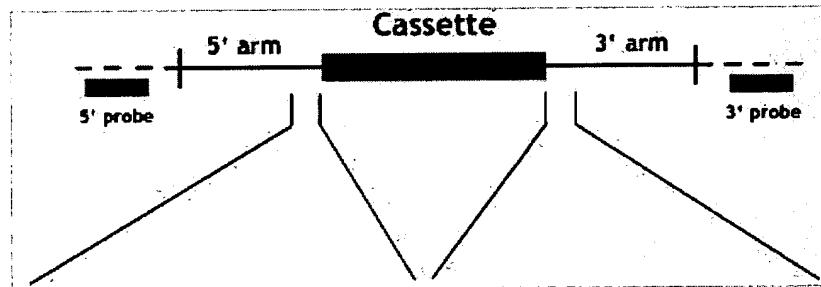
326 bp

**Size of full-length
cDNA: 1387 bp**


Targeting Vector* (genomic sequence)**Construct Number: 2639****Arm Length:**

5': 2.5 kb

3': 4 kb

LacZ-Neo**Cassette****Targeting Vector****Endogenous Locus***** Not drawn to scale**

5' >GCAACACAATGCTTGTAGGTA
TAGCCTGTGAGTTTTCCAGCTTC
CTTGTATCTTATAGATTCTGGGTA
AAGAGTGTGGACATGTTTGTTT
CAAAGGCAATCACTTATTTCTTA
TTTCTCTCCTTACAGACCTAGA
GGATCAAGTCATAATGGGAGCATT
TTTAGACAAGCCAAAGATGGGAGAA
GCATAATGCC<3' (SEQ ID
NO : 3)

5' >CTGCTGTGAGCACTTGTAGA
TCACATCACCAATAACCAGGATT
CAGAGGATCTGCAGGAGCACCTTC
TGTGGAGAACGTAAGAATGGAAT
CAGAACAGGGTTCTGGAGATTGA
TGAACACATGAGAGTTATGTCAGA
GAAGAACATGGTGCAGATAGAAG
CGGGTCAACAGCTGTGGCGTCTT
AATCTCTCCCC<3' (SEQ ID
NO : 4)

FIGURE 2B